NORTH and SOUTH DAKOTA HORTICULTURE

Volume III Number II

FEBRUARY 1931

TABLE OF CONTENTS

Annual membership fee, $1.00, fifty cents of which shall be for a year's subscription to the North and South Dakota Horticulture. Entered as second class matter at the Post Office of Pierre, South Dakota, under the Act of August 24, 1912.

NORTH AND SOUTH DAKOTA HORTICULTURE

Membership in the South Dakota Horticultural Society is one dollar, fifty cents of this amount is for the subscription to "North and South Dakota Horticulture". The subscription rate for affiliated organizations is twenty-five cents.

Published Monthly at Schubert Building, Pierre, S. D., by the North and South Dakota State Horticultural Societies.

GARDEN NOTES

F. X. Wallner, Sioux Falls

During January Canada is having an "Onion Week" just to help the growers sell their product. They figure that if everyone cooks, eats or even wastes, in preparing one or two more onions than they otherwise would, they have helped the producer reduce their surplus. I sure wish I could put across a drive that would reduce my overfilled cellar, big or small, red, yellow or white. There are a lot of tears there—even though a lot of them are sweet Spanish onions. At the best they will be a big loss and we are advised to make further reduction in acreage this season. That gives the new grower more chance to unload; also such districts as Peat Bog Sections, irrigated districts and dam sites that are being built throughout the country. They are not supposed to pay any attention to this reduction talk, rather double the acreage.

Over 20 seed catalogs so far (January 18) have arrived and we do buy from several of them as we like to have these books, especially the ones that make a specialty of some one or more outstanding vegetable. We miss Peter Hendersen's catalog of New York, perhaps the most costly seed catalog put out year after year, but we missed buying a few years so our name was cut off because these high priced books are not sent to any but customers. We notice a difference in price of some seed. The sweet Spanish seed from one list is $2.50 one-fourth pound or $7.50 per pound; then others a little less, then on down to about $2 per pound. We have decided to not get any of the yellow globes or yellow flats this year and use the sweet Spanish only, but I would say not to cut out a good type until you are sure the new one is better.

We sure enjoyed our trip to Mitchell and the horticultural meeting. The banquet, the trip out to the new lake and greenhouses and the trip down to the basement room with the rows of kegs and jars. There may be something wrong with the fellow that wants this stuff often but when the doctor says we should have a hot drink or two to drive out this la grippe, we almost have to believe it. The hot lemonade does not always do the trick. Some think you could get those kinks out by using the rubbing variety. Oh, well. Then, too, we enjoyed the return trip from Mitchell to Sioux Falls and home in 1 hour and 30 minutes. Many thanks to George Gurney.

The state corn, grain and potato show held here at Sioux Falls the week of January 12-16 was the biggest ever. The Cobbler and Ohio potato were the best I have ever seen. The corn and grains also. We notice that the Reeds Yellow Dent is gradually creeping north in the state. Twenty years ago it was grown just in Union, Clay and Yankton counties. Although Jewell, Wimple, Silver King and several other varieties showed up much better than 10 years ago when the show was last held here.

NORTH DAKOTA STATE HORTICULTURAL SOCIETY NEWS LETTER

January, 1931

C. B. Waldron, Secretary

At a meeting in Bismarck January 13-16 of the county school superintendents, one of the questions discussed was that of the improvement of rural school grounds. The North Dakota state law provides for rural school grounds of a minimum size of two acres and also for planting and other improvements, which provisions in many if not most cases have been wholly disregarded. It is possible that the members of the horticultural society of both North and South Dakota can render efficient aid in carrying forward this important work. The expense is not so great that any district cannot undertake it even in times as hard as the present. It is not necessary and probably not desirable that all of the work be undertaken in any one season. The most important single feature for rural school ground improvement is that of protection against the wind. This calls for the planting of a windbreak or shelterbelt of some three or four rows of trees on the exposed sides of the school grounds, which naturally would be on the north and west. Three rows 10 feet apart of the right variety of trees will meet the requirements very well. It has been suggested that perhaps the one owning the land adjoining the school grounds would be glad to give up a strip for this purpose since the total amount of ground required would not be more than a quarter of an acre. In most cases the land adjoining the school ground has been tilled so that the trees could be planted the first season. The total number of trees required for this purpose would be about 200, setting them five feet apart and an equal number of Caragana set two and a half feet apart for the outside row. The trees for the inside row could be of the kinds that thrive in the neighborhood, such as Ash, Chinese Elm and Russian Olive for the drier parts of the state, substituting Willow and the American Elm for the Ash and Russian Olive in the more favorable situations. In case tilled land cannot be secured adjoining the school grounds, it will be necessary to plow and cultivate a strip of the required width, preparing it for planting the following season. Trees for windbreak planting need not be more than two or three years old and about the same number of feet in height. These are less expensive and more likely to grow than larger trees. For the first two years the ground should be treated exactly like that in a corn field, after which mulching can be substituted for cultivation if it is desired.

At the same time this strip is being prepared for the shelterbelt, shade trees of the Northwest Poplar or Chinese Elm may be planted some 30 feet apart along the school grounds. These will have to be planted with more care and the sod should be stripped away for three feet or so on either side of the trees. Mulching with coarse manure is a good practice as it holds the moisture and keeps the ground mellow. These trees of course will need some support such as a stick to which the tree can be tied with strips of cloth or rubber obtained from old automobile tires.

Another important feature in school ground planting is a number of shade trees planted in a clump at a place where they will not interfere with playground activities. The Northwest Poplar, Chinese Elm and Ash are best suited for this purpose.

One other feature remains to be considered—that of planting shrubs about the outbuildings and also perhaps around the foundation of the schoolhouse, particularly across the front. These may well be of the native kinds such as Sumac, Red Dogwood, Thorn Apple, Juneberry, Silver Leaf, Chokecherry, Highbush Cranberry and any of the other shrubs that are to be found in the thickets or brush land of the state. These of course can be secured without expense and the entire school with certain of the patrons could well spend a day collecting and planting this material. When we remember that young people are required to spend a large part of each day for many years upon the school grounds it seems

only considerate and wise to make these grounds comfortable and attractive.

In reply to those who say that such an undertaking is hardly possible it might be well to remind them that on any land where farm crops can be grown, some kinds of trees will thrive if given the care of any other cultivated farm crop. The local nurseries can be depended upon to furnish this planting stock at a very reasonable cost and it is safe to say that the grateful pupils will be more than glad to give them such care as is necessary to secure their best growth. This is an appropriate subject for discussion at this time of year for meetings of the parent-teachers associations and clubs of various kinds.

At this time of year the most entertaining reading is found in our nursery and seed catalogs. It is feared that now while everyone is talking of hard times that there is a temptation to pass up everything in the way of ornamental planting for the home. At the same time most of us are likely to be found spending about the usual amount of money for the usual things which of course will include many of the luxuries of less importance and surely of less permanence than the improvement of our home grounds. A judicious expenditure of even a small sum each year and the effort made to carry out a well defined plan would seem to be justified even at a time when expenditures must be scanned very closely. If one can do no more than to obtain a few small seedlings of the various trees and shrubs and line them out in the garden for a year or two he will at least be moving in the right direction and will find himself in possession of valuable planting stock that will naturally find its place in the development of the home landscape. A single peony or iris plant costing not much more than a package of cigarettes or a gallon of gasoline will in two or three years grow into several plants that will make a decided difference in the appearance of the place.

One of the most important steps toward farm relief is to lessen living costs. One of the surest ways to do this is to provide a good farm garden. We are hoping that the coming seasons will not be so unfavorable as the last ones have been but even if they should be it is still possible to produce a very considerable amount of healthful and nutritious food supplies on a well cared for quarter acre of land. The writer visited many gardens last summer from which their owners were putting up large quantities of canned vegetables of many kinds to carry them throughout the year. This means they will not be put to the necessity of exchanging a bushel of barley for a can of corn and other things in like proportion. It is not too early to make a carefully prepared plan of the family garden and to order the necessary seeds before the spring rush begins.

NEW MINNESOTA PLUM A GIANT AND A BEAUTY

Minnesota fruit growers are soon to have a new plum presented for their approval. This new fruit has been developed at the fruit breeding farm of the Minnesota Agricultural Experiment Station and so far as is known only as No. 194. It attracted much attention from State Fair visitors this year because of its unusual size and beauty.

No. 194 is the first outstanding hybrid of a new type, according to Dr. A. N. Wilcox, one of the University's fruit breeders. The fruit, which ripens in late August and early September, is very large, nearly two inches long, and is conic and pointed in shape. The skin is dark red, covered with an attractive bloom. The flesh, which is deep yellow, has the unusual quality of being tender and juicy and at the same time firm. The flavor is sweet, sprightly, and very pleasing.

Dr. Wilcox predicts that this plum will be very popular for market purposes, because of its beauty, high quality, and firmness. Its distinctive shape makes it easy for purchasers of the fruit to identify and remember it, he says. It will probably be named and distributed within the next few years.—Minnesota Horticulturist.

EXTRACTS FROM THE DIARY OF A TRAVELING MAN

W. A. Simmons

December 10—Before making up your order for insecticides and fungicides for the coming year it might be well to consider the recommendations of Pliny in his Natural History, written some 2000 years ago. Dr. T. J. Talbert in an article in the American Fruit Grower magazine quotes these recommendations as follows: "Many people kill both ants and moles with Amurca (an extract from olive) and preserve apples from caterpillars as well as from rotting by touching the top of the tree with the gall of a green lizard.

"To prevent animals from doing mischief by browsing upon the leaves, they should be sprinkled with cow dung each time after rain.

"Another method again is to pound lupines in oil and anoint the roots with the mixture. The fig trees are sprinkled with ashes, as also with rue, to keep away worms and to prevent the roots from rotting."

Dr. Talbert seems to doubt the efficacy of these methods for Missouri conditions, and we might also point out the difficulty of obtaining the ingredients. For instance, green lizards are about as rare as pink elephants in the Dakotas under modern Volstead conditions.

December 12—In Haskins question and answer department of the Daily Argus-Leader recently appeared this: "Q. Where is the largest grape vine in California? A. The Bureau of Plant Industry says that the largest grape vine is at the Alisa schoolhouse in Carpenteria, Calif. It requires more than one-half acre of ground and yields on the average of 10 tons of grapes per annum. One year the yield was as high as 14 tons." Wonder if it would be safe to trust any one in this state with that many grapes.

December 15—We are indebted to H. E. Beebe of Ipswich for a very interesting little booklet by Dr. Forrest Shreve entitled "The Desert Laboratory of the Carnegie Institution." This institution was started in 1903 and has been gradually enlarged as to personnel and subjects under study. They have 800 acres effectively fenced since 1905, "and the long period without disturbance has brought the plant life back to virgin desert conditions such as one can find only in the most remote and ungrazed parts of Arizona."

The booklet describes a number of the wild plants within this enclosure, one of the most interesting as follows: "There is surely no plant in all Arizona which attracts more attention than the state flower—the sahuaro. It is a weird surprise to the newcomer and a cherished symbol of home to the Arizonian. Along with the other kinds of massive cacti found in Mexico it has many interesting features of structure and behavior.

"The commonest botanical question asked in Arizona is 'How old are the biggest sahuaros?' The answer is based on indirect evidence through a study of its rate of growth at different heights, for there are no annual rings to count. It takes from 15 to 25 years for them to reach a height of one foot, unless they are given some extra water. They grow very slowly at first and then speed up to a growth of three or four inches per year in the best localities. The age of the very large ones is between 150 and 175 years.

"The showy white flowers of the sahuara appear in May, forming a crown at the top of the trunk and at the tip of each branch. The juicy red fruits come to maturity in June, just at the driest time of the year and the pulp and seeds are eagerly sought by the birds.

"The fruits and the woody skeleton are the only parts of the sahuara that are useful to man for it contains extremely little starch, sugar or other substances of value." These old sentinels of the desert attain a height of from 60 to 75 feet.

December 20—In many places in Montana I have noticed a very pretty dark red rose growing on a bush about three feet high and which seemed to supply a wealth of blossoms all through the growing season.

The caretaker of the courthouse grounds at Stanford supplied me with the name—Prairie King—and also the source of supply, a nurseryman at Great Falls.

In one of my visits to the latter place I stopped in at the nursery but unfortunately the proprietor was out of town and his wife was sick in bed. However, a young lady assistant supplied me with what information she possessed which was a reprint of a two column article that had appeared in a local daily paper a few years previously.

This article stated that the nurseryman had discovered this rose in "Dakota" some 10 years before, but that he had been compelled to work with it several years before discovering the proper hardy root stock to propagate it on. All this was rather indefinite of course, but it was all there was regarding its origin.

No especial hardiness was claimed for this rose as purchasers were advised to cut it down to within six or eight inches of the ground each fall, cover it with two feet of soil and then to apply a heavy mulch of straw or hay. This is the treatment accorded it by all who possess it and it comes out alive and anxious to please each spring. It grows up rapidly and is a blaze of fine blooms all summer and fall. It looks to me like the Gruss and Teplitz rose and if so, this nurseryman is not only to be pardoned but congratulated on giving it a christian name.

Were one to come on the name Gruss and Teplitz for the first time, without explanation, he might suspect it was some kind of sausage of doubtful wholesomeness, but as applying to a beautiful rose, never. Prairie King is much better and I believe this fine rose would be much more extensively planted were this name universally adopted. Probably few of us prune our roses as much as we should and this system of pruning and covering gives fine results in Montana and no doubt would do the same here.

January 1—We wish you all the usual good wishes of the season, viz., a happy new year and a sane Fourth of July. Fellow citizens have been wont to bemoan the fact that our town is not located on any transcontinental railway line, though the increased used of the automobile and the fact that we are located on two through east and west trails has considerably lessened the feeling of handicap. Have heard no one complaining, however, that the weather bureau man has so far this winter routed all the storms either over the northern or southern route. To date the mercury has not dipped below the zero mark and we have hardly had enough snow to make an effective snowball. The upper three or four inches of soil is frozen, but beneath that, digging it is as easily accomplished as in summer. Our friend, Mr. Dybvig, brought in a large spruce tree recently and set it on the premises of a neighbor who craved a living Christmas tree as his place was entered in the home decoration contest. The tree was set so carefully that the judging committee had no idea the tree had not spent most of its life there.

DUTCH ELM DISEASE

A disease of the elms known as the Dutch elm disease, which appeared in Holland about 10 years ago and since that time has spread over that country, has been found in Ohio. The disease has been found in Cleveland and Cincinnati and at present is confined to relatively few trees. Plant pathologists had been looking for this disease in America for a number of years, but it had not previously been found.

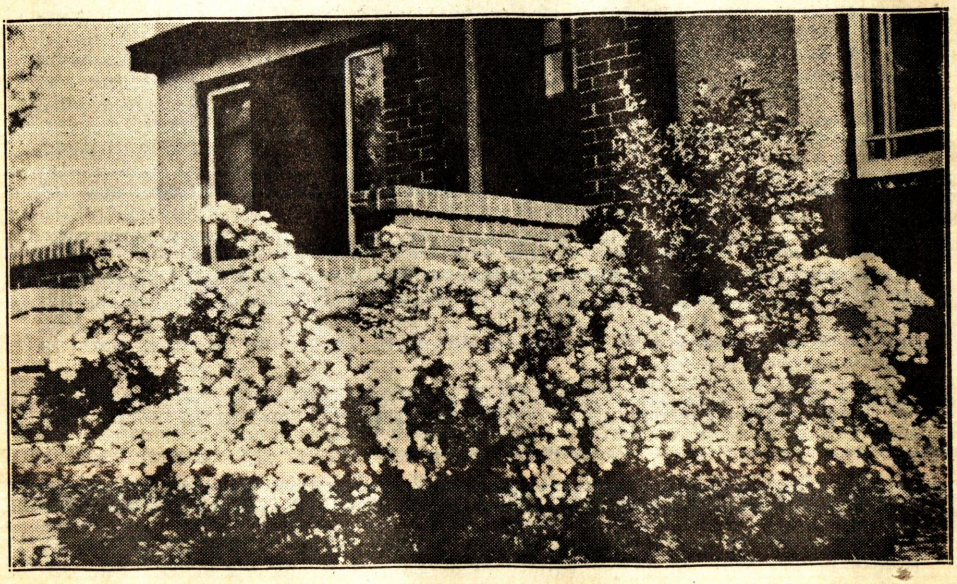
The symptoms of Dutch elm disease are sudden wilting of the leaves of a few branches or over the entire tree, followed by yellowing and dropping of the foliage from the affected parts. The tree may be entirely killed in one summer or it may be a number of years before the disease finally kills it.

No cure is now known for individual trees having the disease. However, it is hoped that the spread of the disease may be prevented or at least restricted by prompt removal and burning of affected trees.—American Nurseryman.

GARDEN MISCELLANY

Mrs. M. W. Sheafe, Watertown

"Foundation planting should be considered as part of the house, not as a flower garden tucked around its base." This planting should conceal the foundation walls or to an extent render them inconspicuous but which does not attract attention to itself. The exclusive use of evergreens for this purpose is not in favor as more natural effects may be produced by combining shrubs with them. Planting of trees or tall growing shrubs under windows is a mistake and leads to trouble later on. The angles of the house and at the corners may be planted with the taller growing shrubs, varying the height to break the horizontal lines. The shrubbery border planted along a boundary line should have a natural look. The front should never be a straight line but should curve in and out gracefully and naturally. Bear in mind always that you are painting a picture, using the plants and shrubs instead of paints. Think of the lawn space as the canvas or water and the planting as the edge of an island, with little bays alternating with rounded points. The skyline varied by using a tall shrub or group of them here and there.



The Unsightly Foundation Obscured

Clematis Paniculata—A vine that is in every way desirable. It requires very little attention and responds freely with a wealth of starry white flowers in huge clusters, the fragrance fills the air and is most pleasing, coming into bloom late in autumn with the perennial asters mentioned last year. Frequent failures in the growing of this vine have come to my attention for which there may be several reasons. It is important that clematis be planted with the crown three inches below the surface. An open sunny situation somewhat protected from the wind by a wall, tree trunk or building. Acid soil is fatal, but this condition may be corrected by the use of slaked lime. A good loam well enriched with barnyard fertilizer is the best in which to plant. It is sometimes difficult to start this plant, so if slow do not be discouraged. Clematis Jackmanii and Mme. Edouard Andri are both very beautiful and desirable, but unfortunately are not so hardy in our climate. However, planted in a protected location and well grown through the season, then after

killed back by frost, cover the crown heavily with leaves or straw, they will greet you cheerfully in the spring. My experience has been, they need feeding and moisture in large quantity as they seem to exhaust the soil quickly, but one is so well repaid for the extra care by the gorgeous flowers over a long season.

Another variety in the large flowered is Henry I, a white, with which I am not familiar but presume the same requirements are needed.

One of the newer introductions that is very attractive in the garden and also for cut work is the new Golden Marguerite Anthemis tictoria, Perry's Variety. While it is a perennial the seeds start easily and blooming begins when the plants are quite small, is very profuse and continues long after many other flowers are gone. To use with the second blooming of Delphiniums it is exquisite.

Some months ago Trollius or Globe Flower was mentioned, another of this family has come to grace our gardens while not quite so attractive it is very pleasing and useful as it blooms early and for a long time. Europaens Hybrids is the name. The description calls them giant buttercups, ranging from pale yellow to deep orange. The distinguishing difference from the first mentioned is in their open flowers, the former being like a golden ball. A moist shaded situation is best for this family of plants as they have some of the characteristics of the swamp buttercups. Try them if you have not already done so.

A low growing trailing plant of which I am very fond is Saponaria ocymoides splendens, not Bouncing Bet. This plant is useful for the rockery or border, has clean green foliage, rather fine and dainty rose pink, small flowers in great masses and so far as my observation goes, is free from insect invasion, which to me is always a desirable feature.

Last but not least, let us join in the nationwide memorial enthusiasm and "Plant Trees for Washington." A particularly fitting way of remembering the life and services of the "Father of Our Country." " In the symbolism of a tree Washington can be remembered preminently. Deep rooted in the ground a tree is like a man coming up out of the earth, but lifting its branches to heaven and as it grows in usefulness, so it grows in beauty." A tree in every school yard to match the American flag is an idea adopted by thousands of school teachers. The tree has a living appeal to the children if they can have a part in planting it.

NEW FRUIT TRIALS GIVE INTERESTING RESULTS

C. Bolles, McCook, Nebr.

To the fellow who would like to raise Domestica, or Europian, plums in the mid-west there is a big ? mark. We do know that John Robertson is growing a Russian Green Guage in a limited way and there is a Swiss Prune possibly as hardy. Then Minnesota can boast of a Damsen that may or may not be of value. The Canadian station at Ottawa, Ontario, have made several Omaha-Domestica crosses which have not fruited yet. There is a German prune sport claimed to be hardy but untried outside of Maryland. Roberston also has a yellow prune much slower grower than the Russian Green Guage. This seems to cover the field in hardiness.

With us the La Crescent plum stands at the head for quality. We would put the Russian Green Guage in the same class but being the first year to fruit only had a single fruit to go by. The Yellow prune bloomed but didn't fruit. The former blooms several days prior to the prune. The Swiss prune likely blooms with the yellow one.

This is the first year's trial of the Swiss prune and we can see it is going to graft best on the Russian Green Guage and will, with us, do much better on yellow clay than the white. We hope to put the prune sport on trial in the spring.

One thing we did find out, though, is the Domestica refuses to stick on peach roots. Having a wet summer and a Russian Green Guage seven years old we dug 50 sprouts from one tree and they came up and took

root from mid-August on. Whether any of these will pay financially no one knows. They are yet an experiment.

It seems strange that so little progress has beeen made in cherry breeding. But progress is on the way for three stations are now working along this line. Aside from the station work we have a Michigan nursery putting out an early Montmorency cherry which they claim will supersede the early Richmond. This is so new a "find" however that the first buddings went out on trial this fall. Another "find" that checks out as early as the early Richmond appears to be a Duke sport and has fallen into the hands of a well known Missouri firm. This was to have gone out on trial next spring but is being held up until the following fall. In each case but a single bud sport was found in both variations, on fairly close orchards in Michigan.

We often wonder if any one else is ever looking for a something that will hang on in the wind. Small stems on plum fruit seem a prevailing rule. However, we do find an exception in the Kagax Burbank ine on trial from the Minnesota Fruit Breeding Farm. Perhaps the most promising one, No. 194, sure hangs on in the breezes. We hope to learn more of the rest next summer.

This particular number is strictly canning as it refused to jell or make butter. No matter what they may name it, down here it will be called the "pear plum" from the color and shape of the fruit. Some folks are always looking for size but this variety has too much of it. At best eight to 10 fruits fill a quart jar or taken as they come will run fully 100 less per weighed bushel than the Waneta.

No we haven't any trees to sell but are trying to work up a supply for ourselves.

It has been often said the Hybrid plums won't sprout. Well there is an exception. After growing Sapa until seven years old from two trees we have them sprouting on a small scale. If dug and transplanted these will make dandy trees. St. Anthony is another sand cherry cross that sprouts some. We never did get the Opata to sprout and it layers with difficulty or in other words doesn't pay. Oka does better as a layer and wouldn't pay to do if it wasn't to get away from the Americana sprouts of later years.

Looking at the sand cherry cross crowd after selling two seasons we have a warm regard for the Opata. It is the leader and over a period of years will likely make more than any other plum on the market. Oka is too new to see how it will take. We see a place, now, for the St. Anthony if sold cheap enough. This variety rounds out the sand cherry crosses that folks buy for jell making. We haven't had any luck with the Nicollet and are digging them out. Too many things are wrong with it here. Curiously there still is a demand for the Compass but we would hesitate to plant any more trees. We believe pollenization problems could be solved by grafting two varieties on the same tree. We did this with Opata and St. Anthony and it is a near sure cropper. For trial purposes we now work in as high as seven varieties on one tree. However we are wiser than formerly and are sure they all bloom at the same time.

After trying out over a dozen grape varieties so far as getting the money goes we'll tie pretty close to the Beta. This is a variety folks want for jell making and coming on before the market gets going on the Concords, sells quite readily. One of the curses, with us, with the "tame" grapes is the wind. Long before the fruit is ripe a large part of the crop is spoiled through bruising. Then too the fruit is out in the open where the 'hoppers can work at ease. York state folks claim the Fredonia grape is a fast grower and ripens some time before the Beta so we're going to pin about one fourth our faith on it. The pinning is going to take long enough however that we'll only lose our time in laying up a supply of plants from two imported plants.

We can see the grape field isn't going to be over done here as folks dislike to hoe, tie up, take down, prune, bury and unbury the vines. Then we haven't decided how profitable grape growing is going to be.

POSSIBILITIES OF GROWING ONIONS IN THE RED RIVER VALLEY

Henry Peterson, Moorhead, Minn.

The possibility of growing onions in North Dakota and especially in the Red River Valley is very good. The soil here is very suitable for onion culture. This is proven by the fact that during the last 10 years we had an average yield of 500 bushels to the acre, including last year.

Rainfall

Although we have not as much rainfall as they usually have in onion growing sections, our soil holds the moisture much longer than most soils. As a rule we have very little loss from the shortage of moisture. When the ground is well cutivated it holds the moisture for several weeks.

Labor

We do not have the cheap labor that there usually is in the onion growing sections, but the labor cost can be reduced a great deal by eliminating hand cultivation. Weeding costs from $3.50 to $20 per acre, depending upon the condition of the soil, whether or not it is free from weeds. If your soil is real weedy it will not pay to grow onions as the cost of weeding will run as high as $200 per acre.

Future Possibilities

Personally I expect to see the time when there will be thousands of acres of onions grown in the valley. And there also will be a large number of canning factories in the valley which will use thousands of acres of sweet corn and peas. A few days ago a representative of the Minnesota Valley Canning Factory called at the farm and I asked him how long it would be before their company would build factories or a factory here in the valley. He replied, saying they had considered it at one time but then they were able to purchase 14 factories in Wisconsin this last year. But he did say that the corn grown here is the best in the United States and that when they did build factories here there would be several of them. The Minnesota Valley Canning Company are the largest canners of peas and sweet corn in the world.

Experience

We grow from 40 to 50 acres of onions every year and I will tell you the way we grow them. Remember this, that it takes a few years to get into the onion game, that is why it is profitable. Unless you are willing to spend a number of years preparing the soil, you will not make a success of it.

Preparing Soil

Onions should follow some crop that has been kept under cultivation for a number of years—two or three at least. We hoe the field once during the summer and then in the fall if there are any weeds left they are carried off the field so they do not seed in the field. This sounds like a lot of work but it really pays. Many weeds produce 100,000 seeds.

Potatoes

Potatoes are a good crop to plant the year before onions as they are easy to keep clean and there are no stalks to bother with the following year. It pays to manure the field well in the fall before plowing. The manure should be well rotted so that it is free from weeds—about 25 to 30 tons to the acre is usually plenty.

Fall Plowing

Onion plowing should always be done in the fall.

Preparing Field in Spring

In the spring the first that we do is to level the field and then put on about 500 cwt. of commercial fertilizer, 2-12-4. The field is harrowed immediately after the fertilizer has been put on. If the field is loose it is then rolled and dragged again. Some times it is necessary to harrow it two or three times.

Planting

We plant onions with a four-row drill which is drawn by two horses. With such a drill it is easy to plant 15 acres per day.

Amount and Kind of Seed

We plant from two and one-half to three pounds of seed per acre. (Mostly Red Globe onions). The Red Globe yields more and there is a better market for them in the south.

Spacing

The onions are planted in rows 20 inches apart. The drills are set so they seed about 15-18 seeds to the foot. When the drills are set in this way it is not necessary to thin them out. Thinning onions is a big expense.

Testing

Always test onion seed before planting.

Depth

Onions should be seeded about three-fourths of an inch deep. If it is dry it may be necessary to seed them deeper.

Harrowing Onions

If the ground is weedy it is sometimes necessary to harrow the onions just before they come up. This will save a great deal of hand weeding and does not hurt them.

Blind Cultivating

We have also blind cultivated onions and then harrowed about two days later. This not only kills the weeds but also breaks the crust which sometimes forms on the surface after a heavy rain. Unless this crust is broken it is impossible to get a good stand as the onions cannot come through the surface.

Kind of Cultivator

We use a four-row beet cultivator which can be drawn by small horses or mules.

Cultivating

The first time we cultivate we use the disks which throw the dirt away from the onions. After the first cultivation we use the sweeps. Onions are cultivated very much like beets only not quite as deep.

It is necessary to cultivate onions from 8 to 10 times during the season.

Weeding

The field should be weeded before the weeds get large as it not only takes a great deal of moisture out of the ground but also damages the onions when the weeds are pulled out.

Rolling

We never roll onions to break the tops down.

Lifting

For digging or lifting the onions we have a small shovel which we can put on the cultivator and lift two rows at a time, throwing the two rows together into one row, making it much easier for the toppers.

Topping

All onions are topped by hand and are put into sacks and left in the field a few days to dry and then there are some that will sprout.

Sorting

They are then hauled in and sorted into 100 pound bags and placed on boards where they are dried for a week or ten days. It does not hurt if it rains on them while they are drying as they are set on boards and cannot get dirty and they dry very fast after a rain.

Our Cost of Raising

Our cost of raising a bushel of onions is about 25 cents when the yield is 500 bushels to the acre. The price varies from 40 cents to $2 per bushel. A 500 bushel crop nets a profit of $75 to $1250 per acre.

A fact of the matter is two years ago we had 14 acres in one field that yielded 800 bushels to the acre and sold at $2.35 per bushel during the winter which left a profit of $1600 per acre.

TOMATOES

Thos. W. Hobart, Gardener
Broadcasts over KSOO Mondays and Thursdays 4:30 P. M.

If I did not honestly believe that in my more than one-half century of gardening experience—more than 40 years of which have been in what is now South Dakota, that I had not made some discoveries in the methods of growing tomatoes that are germain to the successful growing of that fruit to its greatest perfection I would not dare to write this paper.

Here I had learned to grow tomatoes and other vegetables and flower plants in hotbeds, cold frames and greenhouses in the way essentially the same as they are grown by the great majority of gardeners and greenhouse growers to this day.

When I first landed in Dakota I was told that tomatoes would not ripen here; one of the men who told me this gave me some watermelon seed that he had grown on his claim sod. I knew that if melons could be grown here that tomatoes could also be grown. This proved true, as we never have failed to grow at least a few tomatoes that fully ripened on the vines before frost each season.

In 1890 after being droughted out in Brule county, we came to Sioux Falls and started gardening for market. Having for some 12 or 15 years been a careful reader of such farm papers as the Rural New Yorker, Prairie Farmer, Farm and Fireside, Wallace's Farmer and others and having the bulletins from the experiment station at Ithaca, N. Y., and a teacher's correspondence course from the same college gotten out by Professor L. H. Baily and Mark Slingerland, and having been appointed a government crop reporter for the United States Department of Agriculture and receiving the reports from that source, I had become quite steeped in the idea that to grow everything I planted to its very best and highest development of quality and productiveness was the only thing that was really worthwhile.

About this time there was a depression in the greenhouse business of flower growing and many of the eastern greenhouse men were turning to the growing of vegetables in their houses. Tomatoes being one of the favored crops, almost the first thing that happened was the fact that one set of greenhouse growers had to hand fertilize the flowers in order to have them set fruit.

While another set of growers did not, great controversies arose. I saw at once from the reports that the men who had to fertilize by hand were those who had been growers of carnations and the others who did not had previously grown roses.

The conclusion was irresistable that the difference in temperatures in the different houses was the cause and effect. My knowledge of greenhouse growing told me this, for I knew that carnations were grown "cool" at 48 to 55 degrees, while roses were grown "warm" at or above 60 degrees.

This suggested to me that temperatures probably had much more effect on our outdoor tomato crops than was before realized.

I also reasoned that 60 degrees was very likely to be the minimum to which the tomato plant should be exposed at any time in its growth for any extended period. (Careful experiments over a period of 18 years confirmed this. I may at some future time tell of these experiments as there were many curious results).

I had been taught (as is done by most growers now) to harden off my plants by exposing them gradually to the air and lower temperatures, and was in fact hardening them off in night temperatures of as low as 40 degrees at times before setting them out in the garden.

In 1904 I had two three by six feet hotbed sash frames set to plants transplanted two by three inches apart that I was keeping above the 60 degree mark, but was having an awful time trying to keep them from growing too rank and spindly from the heat.

I could only do this by being very careful not to water too much. I

was trying to carry these plants until the night temperature outdoors would reach a mean of 60 degrees at 4 o'clock a. m. (the coldest part of the night). I had determined not to set these plants in the ground until 60 degrees had held steady for one week as my experience had shown me that it would not likely fall lower for any length of time after it had once held at that mark for six or seven nights in succession.

It was now near the middle of May and the weather was excessively warm by day and the nights were getting warm fast. When after watering these plants one evening, I forgot to take the sash off the next morning before I went out on my selling route. When I reached home that noon and uncovered these plants I found all but some 25 or 30 had damped off.

A peculiar thing about this damping off was that the few plants that were not harmed were those that were shaded by the bar that supported the sash and in the shade cast by the south side of the sash frame.

In those days I grew angry very quickly and to see my well cared for plants all dead caused me to slam the sash to one side and leave the few remaining plants to their fate.

I did not even look at them for a week or 10 days, when my ire had cooled off somewhat I was sorry I had not taken care of the few that were left. When I did look at them they were all laying flat and dead, the stems even shriveled. I was so sorry for them that I watered them thoroughly, remorsefully thinking that I would make up to the dead plants for my neglect.

Perhaps you can imagine my surprise when I went that evening to take a last farewell, I found them all standing upright with stems dark blue or purple and hard as wood. Here at once was the whole secret of hardening off plants in high heat.

I had been setting plants in lots of 100 or more every week since the first of May in my effort to find the best time to set and the results of setting at different night temperatures. These 25 or 30 plants were set in the test garden with the others about the middle of June, the plants being in bud at the time. I was surprised to find that these first blossoms all set fruit. The first blossoms had nearly always dropped off heretofore, sometimes the second and third set of flowers dropped off also. I had found that this happened oftener when plants were exposed to cold too much at some time in their growth.

This lot of plants not only set the first blossoms but every other bunch without a miss. The first fruits were picked from these plants in mid July. While none of any of the earlier settings bore before the first of August. Although they all made more vine growth than did these special plants.

To tell about all the experiments I had made and of those I carried on for some 14 or 15 years or more, with many different tomato varieties would take every page of a whole year's issues of Horticulture. I will only give some deductions from the high spots.

We did not succeed all at once in producing the plant we had in mind nor getting the results that came later on from accumulated experience garnered by experimenting continuously. We first hardened them too much by drying off too severely, this made the stems so hard that cut worms could not cut them off and for three or four years we sold the plants with the guarantee that they were cut worm proof, which in fact they were. We found that this hardening process carried too far curtailed the fruit crop both in size of fruit and quantity and hurt the quality and had to be modifyed.

Another deduction was that no variety of the large fruited tomatoes can be made to produce a large crop of high quality solid fleshed fruit early or late if the plant before setting out is exposed at any time during its growth to a temperature below 60 degrees Farenheit. That any plant at any time in its life that is exposed for three nights in

succession to a temperature much below 60 degrees will not produce a perfect crop.

That even after being in full bearing in late July or August if there are three or more nights in succession where the temperature falls below 60 degrees that the blossoms that open at this time will either not set fruit at all or if they do the fruit will be rough or misshaped, generally lopsided. If you know plants and will think a moment you know that like people or animals they have a period of immaturity of growth that as the season advances this growth becomes more matured and nature makes ready the plant for reproduction, this is the fruit and the seed bearing stage.

The tomato plant as commonly grown to this day is at the time of setting out an immature soft green stemmed plant often weak and spindling and in no way near condition to bear fruit. Your own experience tells you that such plants require four to eight weeks of careful growing to bring them to the stage of maturity that will allow them to bear blossoms and set fruit.

Even though such plants have blossoms when set out they are in no condition to bring fruit to maturity and consequently the buds and blossoms prematurely formed must drop off.

The system of plant growing that we have used for years and that I shall in this paper explain in full detail produces a plant that is in every respect, excepting in size, fully matured so that it at once enters into the production of fruit and because it has not been exposed to adverse or unnatural conditions of temperature or weather that reduces its vitality, will and does produce crops of fruit of quality, earliness, size and because of this, quantity never before attained, the yield not being gained from the production of more fruit in number but by growing the individual fruit to double and treble the size and weight.

Tests show that plants grown by our method will stand more exposure to cold after being set in the open ground with much less harm to the resultant crop than will any plant hardened off by being exposed to any temperature below 60 degrees before being set out in the garden.

While these plants will stand a lower temperature after setting out without great harm than any others, they will if exposed too long, by too early setting out to severe cold nights never fully recover, nor bear fruit as good crops or as large or firm or fine fruit as will those not so exposed that are set later in the season.

(To be continued)

BEEKEEPING GENERALLY BEST ON ONE-MAN SCALE

The average beekeeper will make the most profit if he limits his business to 400 colonies, the number he can care for single handed, the United States Department of Agriculture says. He may be a first rate bee handler but the temperament of a good beeman generally is not the temperament for managing employees efficiently.

One man can do practically all of the work required for 350 or 400 colonies even during rush seasons, the department learned by studying for three years the records of beekeepers in widely separated regions of the country. With an apiary of this size, however, he will need some additional means of income. Beekeeping is at its best, generally, as a supplement to farming. One man in New York state, who farms 100 acres and cares for 70 colonies of bees learned from experience that a 70-colony apiary is equivalent to about 40 acres of land in both income and labor.

One beekeeper who spends little time in his apiary and is an inefficient employer of labor, had a labor cost of more than $6 per colony. He lost 53 cents a colony one year and $1.75 a colony the next year. But not all good beemen are poor managers. One who owns 1800 colonies reported a yield of about 250 pounds of extracted honey from each colony and a total income of $23,387 in 1928 or a net income of $11.78 for each hour he worked with the bees. He hires labor and

knows how to use it. Other beemen have reported returns of $2.40 to $5.50 an hour for their time in the apiary.

The department has studied beekeeping practices in Colorado, Utah, Wyoming, Montana, Idaho, Iowa, New York, Michigan, Ohio and Minnesota. During the next few years the department will complete its nation-wide survey by studying beekeeping on the Pacific Coast, the Dakota plains, in Texas and in the south.

PLANT PREMIUMS FOR 1931

Select your premium now from this fine list and send in your membership fee.

Members of both societies may select one premium from Groups I and II or two from Group II or one only from Group III.

GROUP I.

1. Yellow Flowering Currant, 1 plant.—Oscar H. Will & Co., Bismarck.
2. Champa Cherry, 1 plant.—Oscar H. Will & Co., Bismarck.
3. Japanese Peas, ½ pint.—B. L. Schmitz.
4. Tartarian Honeysuckle, 4 plants.—Wildrose Nursery Co., Wildrose.
5. Virginia Creeper, 1 plant.—Wildrose Nursery Co., Wildrose.
6. Amelie Gravereauz Rose, 1 plant. (Regular price $1.50)—The Northwest Nursery Co., Valley City.
7. Asa Gray Peony, 1 plant. (This peony rates 8.1; color, lilac pink.)—Riverside Gardens, Enderlin.
8. Pixwell Gooseberry, 2 plants.—Horticultural Department, N. D. A. C.
9. Abundance Gooseberry, 2 plants. Horticultural Department, N. D. A. C.
10. Ash Leaf Spirea (Sp. Sorbifolia) 2 plants.—Hort. Dept., N. D. A. C.
11. Chief Raspberry, 2 plants.—Horticultural Department, N. D. A. C.
12. Red-twigged Willow (Salix Britzensis), 12 cuttings, Hort. Dept., N. D. A. C.
13. 1926 Horticultural Handbook, 1 copy.
14. 1928 Horticultural Handbook, 1 copy.

GROUP II.

15. Golden Gem Sweet Corn, ½ lb.—Originated by Hort. Dept., N. D. A. C.
16. Bison Tomato, 1 pkt., determinate growth type.—Hort. Dept., N. D. A. C.
17. Progress Tomato, an improvement over Red River, 1 pkt.—Hort. Dept., N. D. A. C.
18. Buttercup Squash, family size, high quality, 1 pkt.—Hort. Dept., N. D. A. C.
19. Purple Ground Cherry, excellent for preserving or pies.—Hort. Dept., N. D. A. C.

GROUP III.

20. Anoka Apple, very early bearing, 1 plant.
21. Sugar Crabapple, very fine for sauce, 1 plant.
22. Gladiolus, 16 bulbs.
23. Peony, red, 1 root.
24. Peony, white, 1 root.
25. Lilium Elegans, red, 3 bulbs.
26. Iris, three varieties.
27. Babys Breath, two roots.
28. Delphinium, Gold Medal, two roots.
29. Sweet William, Everbearing, two roots.
30. Rose, Crimson Baby Rambler, one plant.
31. Spruce, Black Hills, 6-12 inches, well rooted.
32. Caragana, 6-12 inches, 10 plants.
33. Buckthorn, 6-12 inches, 10 plants.
34. Oka Cherry, one plant.
35. Chinese Elm, 18-24 inches, two trees.
36. Zumbra Cherry, bears early, large, fine cooking, 1 tree.
37. Tom Thumb Cherry, bears young, very prolific, dwarf, 1 tree.
38. Dolgo Crab, our finest jelly crab, one tree.

Tear off the coupon and mail with $1 to R. W. Vance, Secretary, Pierre, South Dakota, if you live in South Dakota, or to C. B. Waldron, Fargo, North Dakota, if you live in North Dakota.

Please enter my name as a member of the South Dakota Horticultural Society for the year 1931 and place my name on the subscription list to receive your monthly magazine regularly. Fifty cents of the dollar is for my subscription to the magazine. Stamps will not be accepted.

First choice plant premium No..... Second choice plant premium No.....

Signed .....

Street or R. F. D. No.....

City and State.....